

EXHIBIT A

Curriculum Vitae

VINCENT JOHN MURPHY**1134 Blewett Avenue****San Jose, CA 95125****(408) 275-1624****kpntouch@earthlink.net****EXPERIENCE*****Symyx Technologies, Santa Clara, CA*****Director, Homogeneous Catalysis****2001-Present**

- Provide technical leadership for a staff of 22, including 10 Ph.D.s.
- Generate and nourish team spirit to accomplish challenging research goals.
- Create, write and present research proposals to attract new business clients.
- Present high-throughput philosophy and research infrastructure to generate new business.
- Develop long-term staffing, budget and facilities projections.
- Successfully led a 3-year \$15 million client-driven catalyst research program.
- Discovered catalyst technologies currently under pilot-plant evaluation for commercial applications. New and expanded 3-year deal under negotiation.

Group Leader, Polyolefins**1999-2001**

- Directed two client-sponsored research programs worth \$34 million.
- Coordinate quarterly group presentations of technical progress to clients.
- Evaluate performance, mentor subsequent career development of direct reports.
- Led team in designing and constructing a fully integrated high-throughput research laboratory.

Staff Scientist**1997-1998**

- Helped generate over \$34 million in research funding.
- Contributed to first high-throughput research infrastructure for new catalyst technologies.
- Invented high-throughput methodologies for the synthesis of organometallic molecules.

Exxon Chemical Company, Baytown, TX**Post-Doctorate Researcher****1996-1997**

- Designed, synthesized, screened and patented new single-sited group (V) polyolefin catalysts within the long-term research program for next generation polyolefins.

EDUCATION***Columbia University, New York, NY*****1994-1996**

Post-Doctorate Researcher: Supervisor Professor Gerard Parkin.

Synthetic and structural aspects of inorganic chemistry.

Oxford University, UK**1990-1993**

Doctor of Philosophy: Supervisor Dr. Dermot O'Hare.

Design, synthesis, and physical characterization of molecular magnetic materials.

University of Manchester, Institute of Science and Technology, UK**1987-1990**

Bachelor of Science in Chemistry, 1st Class with Honors

Publication List: Academic Papers

- 1) The First Fully-Integrated High-Throughput Screening Methodologies for the Discovery of New Polyolefin Catalysts: The Discovery of a New Class of High Temperature Single-Site Group (IV) Copolymerization Catalysts. Boussie, T. R.; Diamond, G. M.; Goh, C.; Hall, K. A.; Lapointe, A. M.; Leclerc, M.; Murphy, V.; Longmire, J. M.; Shoemaker, J. A. W.; Tracht U.; Turner, H.; Uno, T.; Rosen, R. K.; Stevens, J. C. *J. Am. Chem. Soc.* **2003**, *125*, 4306-4317.
- 2) Handbook of combinatorial chemistry: drugs, catalysts, materials (vol 1 & 2). **Murphy, V.**; Weinberg, W. H. Edited by K. Nicolaou, R. Hanko & W. Hartwig. *Chemistry & Industry* **2003**, *1*, 26-27.
- 3) High-throughput approaches for the discovery and optimization of new olefin polymerization catalysts. Murphy, V.; Bei, X.; Boussie, T. R.; Brümmer, O.; Diamond, G. M.; Goh, C.; Hall, K. A.; Lapointe, A. M.; Leclerc, M.; Longmire, J. M.; Shoemaker, J. A. W.; Turner, H.; Weinberg, W. H. *Chemical Record* **2002**, *2*(4), 278-289.
- 4) Triple Tandem Catalyst Mixtures for the Synthesis of Polyethylenes with Varying Structures. Komon, Z. J. A.; Diamond, G. M.; Leclerc, M. K.; **Murphy, V.**; Okazaki, M.; Bazan, G. C. *J. Am. Chem. Soc.* **2002**, *124*, 15280-15285.
- 5) High-throughput approaches to homogeneous catalysis. **Murphy, V.**; Turner, H. W.; Weskamp, T. *Applied Homogeneous Catalysis with Organometallic Compounds* (2nd Edition) **2002**, *2* 740-747.
- 6) The syntheses, structures, and reactivity of *bis*-(Bu^tCp) molybdenum derivatives: nitrogen alkylation of an η^2 -acetonitrile ligand and influence of the chalcogen on the barrier to inversion of the chalcogenoether adducts. Shin, J. H.; Savage, W.; **Murphy, V. J.**; Bonanno, J. B.; Churchill, D. G.; Parkin, G. *J. Chem. Soc., Dalton Trans.* 2001, *11*, 1732-1753.
- 7) Structural studies of the [Tris(imidazolyl)phosphine]metal nitrate complexes {[PimPrⁱ,Bu^t]M(NO₃)⁺ (M = Co, Cu, Zn, Cd, Hg): Comparison of nitrate-binding modes in synthetic analogues of carbonic anhydrase. Kimblin, C.; **Murphy, V. J.**; Hascall, T.; Bridgewater, B. M.; Bonanno, J. B.; Parkin, G. *Inorg. Chem.* 2000, *39*, 967-974.
- 8) Mechanistic and theoretical analysis of the oxidative addition of H₂ to six-coordinate molybdenum and tungsten complexes M(PMe₃)₄X₂ (M = Mo, W; X = F, Cl, Br, I): An inverse equilibrium isotope effect and an unprecedented halide dependence. Hascall, T.; Rabinovich, D.; **Murphy, V. J.**; Beachy, M. D.; Friesner, R. A.; Parkin, G. *J. Am. Chem. Soc.* 1999, *121*, 11402-11417.
- 9) Parallel solid-phase synthesis, screening and encoding strategies for olefin-polymerization catalysts. Boussie, T. R.; **Murphy, V.**; Hall, K. A.; Courtard, C.; Dales, C.; Petro, M.; Carlson, E.; Turner, H. W.; Powers, T. S. *Tetrahedron* 1999, *55*, 11699-11710.
- 10) Solid-phase synthesis and encoding strategies for olefin polymerization catalyst libraries. Boussie, T. R.; Courtard, C.; Turner, H. W.; **Murphy, V.**; Powers, T. S. *Angew. Chem. Int. Ed. Eng.* 1998, *37*, 3272-3275.

- 11) False minima in X-ray structure solutions associated with a "partial polar ambiguity": Single crystal X-ray and neutron diffraction studies on the eight-coordinate tungsten hydride complexes, $W(PMe_3)_4H_2X_2$ ($X = F, Cl, Br, I$) and $W(PMe_3)_4H_2F(FHF)$. **Murphy, V. J.**; Rabinovich, D.; Hascall, T.; Klooster, W. T.; Koetle, T. F.; Parkin, G. J. *Am. Chem. Soc.* 1998, *120*, 4372-4387.
- 12) Low-coordinate (arylimido)vanadium(V) alkyls: synthesis and reactivity of $V(NAr)(CH_2Ph)_3$ ($Ar = C_6H_3-2,6-Pr'_2$). **Murphy, V. J.**; Turner, H.; *Organometallics* 1997, *16*, 2495-2497.
- 13) Reversible C-H bond activation in coordinatively unsaturated molybdenum aryloxy complexes, $Mo(PMe_3)_4(OAr)H$: Comparison with their tungsten analogs. Hascall, T.; **Murphy, V. J.**; Parkin, G. *Organometallics* 1996, *15*, 3910-3912.
- 14) Hydrogen bonding to transition metal fluoride ligands: The synthesis and structure of the bifluoride complex $Mo(PMe_3)_4H_2F(FHF)$. **Murphy, V. J.**; Hascall, T.; Chen, J. Y.; Parkin, G. J. *Am. Chem. Soc.* 1996, *118*, 7428-7429.
- 15) Bis(pyrazolyloether) ether ligation to zinc and cobalt: Meridional vs. facial coordination and the suitability of such ligands in providing a NNO donor set for modeling bioinorganic aspects of zinc chemistry. Dowling, C. **Murphy, V. J.**; Parkin, G.; *Inorg. Chem.* 1996, *35*, 2415-2420.
- 16) Tris(imidazolyl)phosphine cobalt complexes: Structural comparisons with isoelectronic tris(pyrazolyl)hydroborato analogs. Kimblin, C.; **Murphy, V. J.**; Parkin, G. J. *Chem. Soc. Chem. Commun.* 1996, *2*, 235-236.
- 16) False minima and the perils of a polar axis in X-ray structure solutions: Molecular structures of $W(PMe_3)_4H_2X_2$ ($X = F, Cl, Br$) and $W(PMe_3)_4H_2F(H_2O)$. **Murphy, V. J.**; Rabinovich, D.; Parkin, G. J. *Am. Chem. Soc.* 1995, *117*, 9762-9763.
- 17) Synthesis and characterization of trimetallocenes and trimetallocenium salts. Barlow, S.; **Murphy, V. J.**; Evans, J. S. O.; O'Hare, D. *Organometallics* 1995, *14*, 3461-3474.
- 18) Oxidative cleavage of the Te-Te bond in η^2 -ditellurido complexes: Syntheses and structures of $M(PMe_3)_4(\eta^2-Te_2)H_2$ ($M = Mo, W$). **Murphy, V. J.**; Rabinovich, D.; Halkyard, S.; Parkin, G. J. *Chem. Soc. Chem. Commun.* 1995, *11*, 1099-1100.
- 19) Synthesis of $Mo(PMe_3)_6$ and *trans*- $Mo(PMe_3)_4(E)_2$ ($E = S, Se, Te$): The first series of terminal sulfido, selenido, and tellurido complexes of molybdenum. **Murphy, V. J.**; Parkin, G. J. *Am. Chem. Soc.* 1995, *117*, 3522-3528.
- 20) Synthesis, crystal structures and magnetic properties of salts containing *bis*[hydrotris(3,5-dimethyl-1-pyrazolyl)borate]iron(III). Mason, S. J.; Hill, C. M.; **Murphy, V. J.**; O'Hare, D.; Watkin, D. J.; *J. Organomet. Chem.* 1995, *485*, 165-172.
- 21) Synthesis of permethylindenyl complexes of the early transition metals. Crystal structures of $Ti(\eta^5-C_9Me_7)Cl_3$ and $Zr(\eta^5-C_9Me_7)_2Cl_2$. O'Hare, D.; **Murphy, V.**; Diamond, G. M.; Arnold, P.; Mountford, P. *Organometallics* 1994, *13*, 4689-4694.
- 22) Synthesis and magnetic characterization of $[Fe(\eta^5-C_9Me_7)_2]^+[A]^-$. ($A = TCNE, TCNQ, DDQ$). X-ray structure of $[Fe(\eta^5-C_9Me_7)_2]^+[TCNQ]^+$. **Murphy, V. J.**; O'Hare, D. *Inorg. Chem.* 1994, *33*, 1833-1841.

- 23) Synthesis, X-ray structure and spin crossover in the triple-decker complex $[(\eta^5\text{-C}_5\text{Me}_5)\text{Cr}(\mu^2\text{:}\eta^5\text{-P}_5)\text{Cr}(\eta^5\text{-C}_5\text{Me}_5)]^+ [\text{A}]^-$ ($\text{A} = \text{PF}_6, \text{SbF}_6$). Hughes, A. K.; **Murphy, V. J.**; O'Hare, D.; *J. Chem. Soc. Chem. Commun.* 1994, 2, 163-164.
- 24) Synthesis and magnetic properties of 1:1 salts containing the bis(η^6 -hexamethylbenzene) cobalt cation. O'Hare, D.; Rai-Chaudhuri, A.; **Murphy, V.**; *J. Chem. Soc. Dalton Trans.* 1993, 20, 3071-3074.
- 25) X-ray structure of manganese toluene iodide complex $[\text{Mn}(\eta\text{-C}_6\text{H}_5\text{Me})_2]^+\text{I}^-$. O'Hare, D.; **Murphy, V.**; Bland, A.; Scott, P. *J. Organomet. Chem.* 1993, 443, C37-C38.
- 26) Synthesis and characterization of permethylindenyl complexes of cobalt and chromium: crystal structures of $[\text{Cr}(\eta^5\text{-C}_9\text{Me}_7)_2]$, $[\text{Cr}(\eta^5\text{-C}_9\text{Me}_7)_2][\text{PF}_6]$, $[\text{Cr}(\eta^5\text{-C}_9\text{Me}_7)_2][\text{PF}_6]$. O'Hare, D.; **Murphy, V. J.**; Kaltsoyannis, N.; *J. Chem. Soc. Dalton Trans.* 1993, 3, 383-392.
- 27) Charge separation reactions of nitrous oxide cations formed by low- and high-energy ionization. Eland, J. H. D.; **Murphy, V. J.** *Rapid. Commun. Mass. Spec.* 1991, 5, 221-225.

Publication List: Published Patents

- 1) Combinatorial synthesis and analysis of organometallic compounds and olefin polymerization catalysts. Weinberg, W. H.; MacFarland, E.; Boussie, T.; Turner, H. W.; van Beek, J. A. M.; **Murphy, V.**; Powers, T. U.S. Patent 6,030,917, 2000.
- 2) Combinatorial synthesis and analysis of organometallic compounds and homogeneous catalysts. Weinberg, W. H.; MacFarland, E.; Boussie, T.; Turner, H. W.; van Beek, J. A. M.; **Murphy, V.**; Powers, T. U.S. Patent 6,248,540, 2001.
- 3) Combinatorial synthesis and analysis of organometallic compounds and catalysts. Weinberg, W. H.; Goldwasser, I.; Turner, H.; **Murphy, V.** MacFarland, E.; Boussie, T.; van Beek, J. A. M.; Powers, T. E.P. 1 146 030, 2001.
- 4) Combinatorial synthesis and analysis of organometallic compounds and catalysts. Weinberg, W. H.; Goldwasser, I.; Turner, H.; **Murphy, V.** MacFarland, E.; Boussie, T.; van Beek, J. A. M.; Powers, T. E.P. 0 985 678, 2000.
- 5) Ether-amine ligand/metal complex polymerization catalysts, compositions, and use for olefin polymerization. Goh, C.; Diamond, G. M.; **Murphy, V.**; Leclerc, M. K.; Hall, K.; LaPointe, A. M.; Boussie, T. R.; Lund, C.; Uno, T. PCT Int. Appl. WO 0174910, 2001.
- 6) Polymerization catalyst ligands, catalytic metal complexes and compositions and methods of making the same. Lund, C.; Hall, K.; Boussie, T.; **Murphy, V.**; Hillhouse, G. PCT Int. Appl. WO 0059961, 2000.
- 7) Ionic liquids and processes for production of high molecular weight polyisoolefins. **Murphy, V.** PCT Int. Appl. WO 0032658, 2000.
- 8) Combinatorial discovery and testing of ionic liquids. **Murphy, V.**; Hagemeyer, A.; Poojary, D. M. PCT Int. Appl. WO 0032572, 2000.
- 9) Encoding of organometallic libraries. Boussie, T.; **Murphy, V.**; van Beek, J. A. M.; Devenney, M; Turner, H. W.; Powers, T. PCT Int. Appl. WO 9905318, 1999.
- 10) Metal complexes having ancillary ligands for polymerization of olefins. Boussie, T. **Murphy, V.**; van Beek, J. A. M. U.S. 6,242,623 2001.
- 11) Delivery and scavenging agents for combinatorial synthesis of organometallic compounds. Boussie, T.; Hall, K.; LaPointe, A. M.; **Murphy, V.**; Powers, T.; van Beek, J. A. M. PCT Int. Appl. WO 9856796, 1998.
- 12) Group 5 transition metal compound polymerization catalysts. **Murphy, V. J.**; Turner, H. W. PCT Int. Appl. WO 9834964, 1998.